

# Project *brief*

Thünen Institute of Fisheries Ecology

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## Comparative study on the occurrence of eel larvae along the European continental slope

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- We assessed the occurrence of larvae of the European eel (*Anguilla anguilla*) in the Bay of Biscay and around the Iberian Peninsula on board the research vessel Meteor.
- The comparison with historical catch data indicates that there has been a further sharp decline in the occurrence of eel larvae in the study area.

### Background

The spawning area of the European eel (*Anguilla anguilla*) is located in the western Atlantic, from where the larvae drift to the European and North African coasts. After their arrival in continental waters, they undergo metamorphosis into glass eels and colonize inland and coastal waters. Like the entire oceanic life phase of eels, the late larval stage is still poorly studied and understood. In the 1970s and 80s, studies on the occurrence of eel larvae took place along the European continental slope, at the same time as the occurrence of glass eels along the European coasts declined dramatically, which led to the species being classified as critically endangered today. The results of these earlier studies showed a correlation between the decline in glass eels and the occurrence of late larval stages along the continental slope. Whether this correlation can also be confirmed by current data was one of the research questions of an interdisciplinary cruise on board the research vessel Meteor, during which the occurrence of eel larvae shortly before reaching the continental shelf was investigated. Pelagic catches were carried out at 48 stations from the Bay of Biscay to the Mediterranean Sea and several hydrographic parameters were recorded at the same time.

### Objectives

The main aim of the expedition was to assess the larval abundance in the study area. A comparison with historical catches was made to determine whether their abundance had continued to decline and whether this could provide insights into the significance of oceanic factors for the population decline. In the Strait of Gibraltar, the interplay of local current conditions and larval behavior was investigated in order to assess its importance for their migration into the Mediterranean Sea.

### Results

We caught European eel larvae at 12 stations along the Iberian Peninsula and in the Mediterranean Sea. In the Bay of Biscay, the planned work could not be carried out fully due to poor weather conditions; no eel larvae were caught there. The results show that the eel larval density around the Iberian Peninsula has continued to decline significantly since the 1980s and that the decline is consistent with the trend in glass eel recruitment. These results indicate that there is no disproportionate increase in mortality during migration in the shelf area and during metamorphosis into glass eels. In addition, the catch data show that the eel larvae are effectively transported from the Atlantic via the Strait of Gibraltar to the Mediterranean by a significant eastward surface current in combination with their nocturnal vertical migration into the upper water layers.

### Conclusions

This study is a snapshot and the initial findings need to be further analyzed in follow-up studies. Nevertheless, the results show the potential of such studies for management-relevant questions on eel. In addition to the comparative assessment of year class strengths among years, monitoring at geographical bottlenecks (e.g., Strait of Gibraltar) could be used in the future to monitor recruitment into large areas of the distribution range.

### Further Information

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#### Partners

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#### Publications

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